



NJ Department of Transportation
Office of Maritime Resources
Sediment Decontamination Demonstration Program

Project Update for **Upcycle Associates, LLC**
Last Updated: February, 2004

Upcycle Associates combines the dredging experience of Jay Cashman, Inc. of Boston,



MA with local NJ talent on the manufacture of lightweight aggregate to provide a unique way to manage contaminated dredged materials. Dewatered dredged material is mixed with shale fines and pelletized using standard industrial techniques. The material is then fed into a rotary kiln at temperatures exceeding 2500 degrees F. The heat vaporizes the organics causing the pellet to “puff”. The pellet is then slowly cooled

along the length of the kiln. The finished pellet is an amazingly hard, completely inert aggregate that can be used in concrete applications requiring minimizing weight (bridges and floors of high rise buildings). There is currently an identified market of 900,000 tons of lightweight aggregate in the Northeastern US area alone.

In 2001, Upcycle Associates completed a pilot test of their technology on 4 cubic yards of dredged material from Stratus Petroleum in northern Newark Bay. Approximately 350 cyd of material was processed through a belt filter press to prepare the material for shipment. The dewatered sediment was mixed with shale fines and extruded into 1-2 inch pellets. A total of 4,119 lbs of pellets were produced.

The kiln utilized for the test was a pilot plant owned and operated by the Fuller Corporation in Catasauqua, PA. The kiln was monitored during the test for emissions at various locations in the system (post kiln, post afterburner, stack and baghouse fines) and no violations of applicable standards were observed. A total of 3,084 lbs of lightweight aggregate pellets were produced. While the dredged material used was typical of navigational dredged materials in NY/NJ Harbor, there were no detectable concentrations of any measured organic pollutants in the final product. While metals were present, none were shown to be leachable, illustrating the efficacy of the treatment. The resulting pellets met or exceeded all ASTM standards for lightweight aggregate. A copy of the full pilot report is available on the NJDOT/OMR website.



This project met the goals of the sediment decontamination demonstration program for a pilot phase project. Upcycle Associates has yet to submit a proposal for a demonstration level project, however the technology is considered to be a safe, effective and economically viable process for the manufacture of lightweight aggregate from navigational dredged material.